

1. A software configurable network diagnostic module suitable for implementing a plurality of different network diagnostic functions, the software configurable network diagnostic module comprising:

a bus interface configured to exchange data with a computer system bus;

one or more programmable logic modules, each programmable logic module configured to process bit files that cause the programmable logic module and at least one communicatively coupled port to interoperate to implement one of the plurality of different network diagnostic functions, each programmable logic module including a clock configured to coordinate the transfer of data between the programmable logic module and the at least one communicatively coupled port;

one or more ports, each port communicatively coupled to one of the one or more programmable logic modules, each port being network connectable to a network; and

a control module communicatively coupled to the bus interface and communicatively coupled to each of the one or more programmable logic modules, the control module configured to coordinate the transfer of data between the bus interface and the one or more programmable logic modules.

2. The software configurable network diagnostic module as recited in claim 1, wherein the bus interface comprises a PCI bus interface.

3. The software configurable network diagnostic module as recited in claim 1, wherein the one or more programmable logic modules comprise one or more FPGAs.

4. The software configurable network diagnostic module as recited in claim 3, wherein the one or more FPGAs comprise circuitry that, in response to receiving appropriate instructions, can implement any of the plurality of different network diagnostic functions.

5. The software configurable network diagnostic module as recited in claim 1, wherein the one or more programmable logic modules comprise one or more programmable logic modules that are configured to interoperate with at least one communicatively coupled port to implement one of the plurality of different network diagnostic functions, the one of the plurality of different network diagnostic functions being selected from among at least a network analyzer, a jammer, a generator, and a bit error rate tester.

6. The software configurable network diagnostic module as recited in claim 1, wherein the one or more ports comprise at least one port configured to receive a small form factor pluggable connector.

7. The software configurable network diagnostic module as recited in claim 1, wherein the one or more ports comprise at least one port configured to receive a 10 Gigabit small form factor pluggable.

8. The software configurable network diagnostic module as recited in claim 1, wherein the one or more ports comprise at least one port configured to receive an XBI connector.

9. The software configurable network diagnostic module as recited in claim 1, wherein the control module comprises a control module configured to process address information that identifies a programmable logic module from among the one or more programmable logic modules.

10. The software configurable network diagnostic module as recited in claim 1, further comprising:

one or more memory modules, each memory module communicatively coupled to a corresponding programmable logic module, each memory module configured to store data for a corresponding programmable logic module.

11. The software configurable network diagnostic module as recited in claim 1, wherein the software configurable network diagnostic module comprises a printed circuit board.

12. A chassis computer system suitable for housing one or more software configurable network diagnostic modules, the chassis computer system comprising:

one or more bus interface receptacles, each bus interface receptacle configured to receive a bus interface portion of a network diagnostic module, each bus interface receptacle communicatively coupled to a computer system bus;

a mass storage interface communicatively coupled to the computer system bus, the mass storage interface configured to transfer collected network diagnostic data to a mass storage device;

a trigger input port communicatively coupled to the computer system bus, the trigger input port configured to receive trigger signals indicating the occurrence of an event;

a trigger output port communicatively coupled to the computer system bus, the trigger output port configured to send trigger signals indicating the occurrence of an event;

at least one interconnect port communicatively coupled to the computer system bus, the at least one interconnect port configured to exchange network diagnostic control signals with one or more other chassis computer systems; and

a remote access port communicatively coupled to the computer system bus, the remote access port configured to provide a remote computer system with an interface to resources of the chassis computer system.

13. The chassis computer system as recited in claim 12, wherein the one or more bus interface receptacles comprise at least one PCI bus interface receptacle.

14. The chassis computer system as recited in claim 12, wherein the mass storage interface comprises a SCSI interface.

15. The chassis computer system as recited in claim 12, wherein the trigger input port comprises a trigger input port configured to receive a TTL signal.

16. The chassis computer system as recited in claim 12, wherein the trigger output port comprises a trigger output port configured to send a TTL signal.

17. The chassis computer system as recited in claim 12, wherein the at least one interconnect port comprises at least one port configured to receive an RJ-45 connector.

18. The chassis computer system as recited in claim 12, wherein the remote access port comprises a port configured to receive a connection to a network that includes the remote computer system.

19. The chassis computer system as recited in claim 12, further comprising:

at least one software configurable network diagnostic module communicatively coupled to the computer system bus, the at least one software configurable network diagnostic module suitable for implementing any of a plurality of different network diagnostic functions, each of the at least one software configurable diagnostic modules including:

a bus interface configured to exchange data with the computer system bus;

one or more programmable logic modules, each programmable logic module configured to process bit files that cause the programmable logic module and at least one communicatively coupled test port to interoperate to implement one of the plurality of different network diagnostic functions, each programmable logic module including a clock configured to coordinate the transfer of data between the programmable logic module and the at least one communicatively coupled test port;

one or more test ports, each test port communicatively coupled to one of the one or more programmable logic modules, each test port being network connectable to a test network; and

a control module communicatively coupled to the bus interface and communicatively coupled to each of the one or more programmable logic modules, the control module configured to coordinate the transfer of data between the bus interface and the one or more programmable logic modules.

20. In a computer system that is network connectable to a network, the computer system including a network diagnostic module that is configured to perform a current network diagnostic function, a method for configuring the network diagnostic module to perform a selected network diagnostic function, the method comprising the acts of:

receiving an indication that the network diagnostic module is to be configured to perform the selected network diagnostic function;

receiving a bit file for implementing the selected network diagnostic function at one or more ports, the one or more ports interfacing with the network;

identifying a programmable logic module that controls the one or more ports;  
and

loading at least a portion of the received bit file at the identified programmable logic module to cause the one or more ports to be configured to perform the selected network diagnostic function.

21. The method as recited in claim 20, wherein the act of receiving an indication that the network diagnostic module is to be configured to perform the selected network diagnostic function comprises an act of receiving user-input at an input device coupled to the computer system or a remote computer system.

22. The method as recited in claim 20, wherein the act of receiving a bit file comprises an act of receiving a bit file containing instructions that, when loaded at a programmable logic module, cause the programmable logic module and the one or more ports to interoperate to implement the selected network diagnostic function.

23. The method as recited in claim 20, wherein the act of receiving a bit file comprises an act of receiving a bit file containing circuit design data that, when loaded at a programmable logic module, cause the programmable logic module and the one or more ports to interoperate to implement the selected network diagnostic function.

24. The method as recited in claim 20, wherein the act of receiving a bit file comprises an act of receiving a bit file for implementing a port personality.

25. The method as recited in claim 20, wherein the act of identifying a programmable logic module that controls the one or more ports comprises an act of utilizing addressing information associated with the bit file to identifying a programmable logic module.

26. The method as recited in claim 20, wherein the act of loading at least a portion of the received bit file at the identified programmable logic module comprises an act of reconfiguring the one or more ports from being configured to perform the current network diagnostics functions to being configured to perform the selected network diagnostic function.

27. The method as recited in claim 20, wherein the act of loading at least a portion the received bit file at the identified programmable logic module comprises an act of loading a portion of the bit file for implementing a network analyzer.



28. The method as recited in claim 20, wherein the act of loading at least a portion of the received bit file at the identified programmable logic module comprises an act of a portion of the bit file for implementing a jammer.

29. The method as recited in claim 20, wherein the act of loading the at least a portion of the received bit file at the identified programmable logic module comprises an act of loading instructions or circuit design data for implementing a generator.

30. The method as recited in claim 20, wherein the act of loading the at least a portion of the bit file at the identified programmable logic module comprises an act of loading a portion of the bit file for implementing a bit error rate tester.

31. The method as recited in claim 20, wherein the act of loading the at least a portion of the bit file at the identified programmable logic module comprises an act of loading instructions that cause the one or more ports to be configured to perform the selected network diagnostic function

32. The method as recited in claim 20, wherein the act of loading the at least a portion of the bit file at the identified programmable logic module comprises an act of loading circuit data that causes the one or more ports to be configured to perform the selected network diagnostic function

33. The method as recited in claim 20, further comprising:

an act of transferring network diagnostic data through the one or more ports  
in accordance with the selected network diagnostic function.

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34. A computer program product for use in a computer system that is network connectable to a network, the computer system including a network diagnostic module that is configured to perform a current network diagnostic function, the computer program product for implementing a method for configuring the network diagnostic module to perform a selected network diagnostic function, the computer program product comprising one or more computer-readable media having stored thereon computer executable instructions that, when executed by a processor, cause the computer system to perform the following:

receive an indication that the network diagnostic module is to be configured to perform the selected network diagnostic function;

receive a bit file for implementing the selected network diagnostic function at one or more ports, the one or more points interfacing with the network;

identify a programmable logic module that controls the one or more ports;  
and

load the at least a portion of the received bit file at the identified programmable logic module so as to cause the one or more ports to be configured to perform the selected network diagnostic function.

35. The computer program product as recited in claim 34, wherein the one or more computer-readable media comprise physical storage media.

36. The computer program product as recited in claim 34, wherein the one or more computer-readable media comprise system memory.

37. A network diagnostic module configured to:

receive a bit file, the bit file including instructions or data for implementing a selected network diagnostic function at one or more ports, the selected network diagnostic function selected from among a plurality of different network diagnostic functions that can be implemented at the network diagnostic modules, the one or more points interfacing with a network;

identify a programmable logic module that controls the one or more ports;  
and

load the included instructions or data at the identified programmable logic module to cause the programmable logic module and the one or more ports to interoperate to implement the selected network diagnostic function.